

Careers in Mission Operations

The Mission Control Center is the worldwide nerve center of human spaceflight. If you're interested in becoming part of this, the Mission Operations Directorate at Johnson Space Center is the place for you. Here we have the top specialists in the world in human spaceflight control, and we're the undisputed champs in areas as diverse as propulsion, life support, robotics, spacewalks, guidance, navigation, flight dynamics, data processing, electrical systems, mechanical systems, and communications. Although we continue to lead from Houston, mission control is now an international business with flight controllers at Johnson Space Center interacting with colleagues in Russia, Europe, Japan, and Canada.

But the Mission Control Center does much more than control spaceflights from familiar rooms with rows of consoles. The people who work here plan each flight and train each spaceflight crew. From high-fidelity Space Shuttle and International Space Station simulators to the 6.2-million-gallon pool in which spacewalks are simulated, working in the mission operations facilities at the Johnson Space Center is like working nowhere else in the world.

Our motto is "Res Gesta Per Excellentiam" – "Achievement through Excellence." Failure is not an option, and the people who work here are the giants on whose shoulders the astronauts ride. If you want to be numbered among the best of the best and to go where few have gone before, this is the place for you.

Flight Design and Dynamics Two powerful forces behind the flight of NASA spacecraft are the laws of physics and the people in Flight Design and Dynamics. We're responsible for flight operations, analysis, and design related to mission trajectories. When NASA wants to launch something into the sky, we decide when and where to launch it, how to correct it if it strays off course, and when there's no other option but to abort. Where else can you work and make two vehicles traveling more than 17,000 miles per hour gently float together?

EVA, Robotics, and Crew Systems Operations

We could throw the world's biggest pool party. We manage the Neutral Buoyancy Laboratory – Johnson Space Center's 6.2-million-gallon pool – as well as the Space Vehicle Mockup Facility to train crews and plan flight activities. If you work with us, you'll have access to the full-scale mockups of real spacecraft and equipment we use to train astronauts for extravehicular activities (spacewalks) and robotic operations. We also work in the Mission Control Center during flights to oversee robotics and spacewalks.

Operations Who does what and when? We're responsible for the Space Shuttle and the International Space Station crew timeline development and execution. We integrate and implement Space Shuttle cargo, manage the Space Shuttle and International Space Station operational procedure process, and provide analysis and concepts to support International Space Station design reviews. Do you like the idea of foreign travel? Well, we also provide flight controllers who lead the International Space Station support team in Moscow.

Systems We're responsible for nearly all Space Shuttle and International Space Station hardware and software systems; command and communications; computer systems; mechanical systems and maintenance; propulsion; guidance, navigation, and control; electrical power generation and distribution; environmental control and life support; and thermal control. Our flight controllers work at more than 35 console positions in the Mission Control Center during ascent, orbit, and entry to coordinate and execute on-board and ground operations. We also develop astronaut flight procedures; write console procedures and software; develop operational flight rules; perform detailed pre-, in-, and postflight analyses of vehicle systems and consumables; and participate in future mission design and spacecraft upgrade activities.

Space Flight Training The astronauts wouldn't know how to do their jobs in space without us. We create, develop, produce, and track training programs for the Space Shuttle and International Space Station flight crews and flight controllers. And since training for the International Space Station is an international effort, our jobs often take us to Russia, Canada, Europe, and Japan. We're the ones who look to the future by developing long-range training plans and defining future training concepts.

Flight Director Office Do you want to take charge? The flight director, who is primarily chosen from experienced flight controllers, is in charge of Mission Control Center, leading the team during Space Shuttle and International Space Station flights. He/she supports all mission phases, including pre-mission operations development and planning. By developing flight techniques, procedures, and mission rules, the flight director is responsible for integrating the technical and operational requirements from all supporting Johnson Space Center and program organizations, including international partners.

Flight Avionics Have you ever wondered how the astronauts phone home or get e-mail in space? They use laptops. We develop computer tools and packages to provide the astronauts with an office in space so they can do everything from routine e-mail to commanding the International Space Station – all from a laptop! We also develop data that allows the Mission Control Center to communicate with them. This is the place for anyone who's interested in applying new technology in unusual circumstances.

Advanced Operations and Development We primarily develop the Mission Control Center, the Integrated Planning System, and the International Space Station Training Facility. We also develop concepts and operations requirements for advanced operations technology and automation projects.

Typical degrees Aerospace, Aeronautical, Electrical, Mechanical, Computer Engineering, Physics, Mathematics, and Computer Science

The Apollo Mission Control Room at Johnson Space Center is a registered historical landmark.

